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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/011,910	02/17/98	ABRIGNANI S	0336.001

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EXAMINER	
BRUMBACK, B	
ART UNIT	**PAPER NUMBER**
1642	

DATE MAILED: 03/02/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/011,910	Applicant(s) Abrignani
	Examiner Brenda Brumback	Group Art Unit 1642

☒ Responsive to communication(s) filed on *Jan 10, 2000*.

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *2, 4, 6-14, and 17* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *2, 4, 6-14, and 17* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *8*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. The amendment filed 01/10/2000 has been entered as paper # 9. Claims 1, 5, 15, 16, and 18-20 were canceled. Claims 2-4, 6-14, and 17 were amended. Pending claims are 2-4, 6-14, and 17.

Information Disclosure Statement

2. Applicant's comments regarding reference C3 are noted; however, if applicant wishes the reference to be considered, a copy of the reference is required, as the examiner does not have access to it.

Specification

3. The objection to the specification as not containing an abstract is maintained. Applicant's comment (page 2 of the response) regarding inclusion of an abstract in the response filed 01/10/2000 is noted; however, no abstract was found.

Claim Objections

4. The objections to claims 1-15 and 17 as lacking proper introduction and as missing the " ." at the end of the sentence are withdrawn due to applicant's amendment of 01/10/2000.

Claim Rejections - 35 USC § 112/101

5. The rejection of claims 1-15 and 17 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is maintained for claims 2-4 and 6-10. Applicant's arguments have been fully considered but they are not persuasive for the following reasons.

Applicant argues that the "functionally equivalent variant or fragment thereof" is not indefinite because the disclosure teaches a functional equivalent as "at least binding to E2 protein of HCV" (at page 3, lines 33-34) and a functional variant as incorporating modifications of the amino acid sequence "involving one or more insertions, deletions, or replaced amino acid sequences" (page 3, lines 36-39) or as truncated by the removal of a functional part of the transmembrane domain (page 3, line 38, through page 4, line 3). Applicant argues that the length of the fragment is "is clearly the minimum which binds to HCV". However, the disclosure fails to teach what this minimum length may be. The disclosure also fails to teach or to provide guidance as to what substitutions, insertions, deletions would be expected to retain functional equivalency in the claimed variant. Additionally, the disclosure teaches a functional equivalent as one which "at least binds to E2 protein of HCV". The claimed invention is drawn to any 24kD protein or variant or fragment which binds to any protein of HCV. The disclosure fails to teach what other HCV proteins the claimed protein or variant or fragment would be expected to bind to; therefore, the disclosure fails to teach the function of the protein or variant or fragment thereof as claimed and the claims are indefinite. Furthermore, claims 2-4 and 6-10 now recite a process for

preparing a protein or functionally equivalent variant or fragment thereof, wherein the recited steps only recite preparation of a protein. It is unclear if the variant or fragment is to be subjected to the same steps as those of the protein for preparation or if the variant or fragment is to be further prepared from the protein after it is prepared by the recited steps. Clarification and correction are required.

Applicant's argument the second use of the therm "functionally" is used to modify two different words is noted; however, the rejection is maintained because the disclosure does not teach the metes and bounds of "functionally unglycosolated".

The rejection of claim 10 for recitation of "hyperexpression" is withdrawn subsequent to applicant's amendment; however, it is maintained for claim 6, as claim 6 was not amended to delete the language.

The rejections of claims 8 and 9 for recitation at least one step of hydrophobic interaction chromatography and at least one step of acetone precipitation respectively are maintained. The examiner notes that the specification teaches the steps of chromatography and acetone precipitation; however, as the process is presently claimed, it is unclear if applicant intends that the claimed process incorporate part or all of the procedural steps that are taught in the specification. Amendment to replace "step" with "procedure" does not sufficiently clarify the claimed process because the "at least one" language would seem to indicate that some unidentified portion of the complete procedure is to be incorporated into the claimed process.

The remaining rejections under 35 U.S.C. 112, second paragraph, are withdrawn due to applicant's claim amendments and/ or arguments filed 01/10/2000.

The rejection of claim 15 is under 35 U.S.C. 101 is also withdrawn pursuant to applicant's amendment of 01/10/2000.

6. The rejection of claims 1-15 and 17 under 35 U.S.C. 112, first paragraph, is maintained for claims 2-4, 6-14, and 17.

The rejection of claims 2-4, 6-10, 13, and 17 is maintained for the reasons of record, as applicant has not presented arguments regarding this portion of the rejection.

Regarding the rejection of claims 11 and 12, drawn to a pharmaceutical composition and a method of treating, applicant argues that the disclosure is enabling for therapeutic administration of the compounds *in vivo* because various cell types which have been analyzed for the 24kD protein and HCV infection show a clear correlation between the protein and HCV susceptibility. As was outlined in the rejection (Paper # 6, page 9, second paragraph), Rice teaches that it is known that the 24kD protein CD81 binds HCV envelope proteins; however, Rice also teaches that this protein does not necessarily have any therapeutic application *in vivo* and further teaches that any potential therapeutic application "will depend on many unknowns". Applicant's arguments are only directed to HCV binding by CD81 *in vitro*, which is known in the art; they do not address therapeutic administration of the protein *in vivo*, as is claimed. The teachings found

in the art that any potential therapeutic application is questionable, at best, have not been addressed in applicant's response of 01/10/2000.

Applicant's argument that the claimed invention does not encompass monoclonal antibodies is noted; however, the rejection is maintained because the claimed invention, drawn to functionally equivalent variants and fragments thereof, would seem incorporate fragments of monoclonal antibodies that retain binding affinity for HCV.

New Grounds of Rejection USC § 112

6. Claims 2-10 and 13 are newly rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The claims have been amended to recite a process for the preparation of a protein "capable of specifically binding a protein of hepatitis C virus". The omitted step is the binding step that is needed to be determine the presence of the binding protein, as is now claimed..

Claim Rejections - 35 USC § 102/103

7. The rejection of claims 1 and 17 under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rosa et al. is withdrawn. Applicant's arguments were persuasive.

8. The rejection of claims 1 and 17 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mehta et al. is maintained for claim 17. Claim 17 is drawn to a diagnostic kit comprising a protein of about 24 kD which specifically binds an HCV protein or a functionally equivalent variant or fragment thereof. Applicant has provided no argument as to why the monoclonal antibodies taught by Mehta or fragments of these antibodies would not anticipate or render obvious the claimed protein or variant or fragment thereof. Absent some evidence to the contrary, any fragment of a larger monoclonal antibody which is about 24kD and which retains binding specificity to HCV would anticipate the claimed invention. Mehta et al. teaches such monoclonal antibodies which bind HCV.

9. The rejection of claims 1-3 under 35 U.S.C. 103(a) as being unpatentable over Minutello et al. in view of Rowlands et al.; the rejection of claims 4-8, 10, and 17 under 35 U.S.C. 103(a) as being unpatentable over Minutello et al. in view of Rowlands et al., as applied to claims 1-3 above, and further in view of Shimonaka et al.; and the rejection of Claims 4-10 and 17 under 35 U.S.C. 103(a) as being unpatentable over Minutello et al. in view of Rowlands et al., and further in view of Maat et al. are all withdrawn. Applicant's arguments were persuasive.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. No claims are allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Brumback whose telephone number is (703) 306-3220. If the examiner can not be reached, inquiries can be directed to Supervisory Patent Examiner Paula Hutzell whose telephone number is (703) 308-4310. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Examiner Brenda Brumback, Art Unit 1642 and should be marked "OFFICIAL" for entry into prosecution history or "DRAFT" for consideration by the examiner without entry. The Art Unit 1642 FAX telephone number is (703)-305-3014.

FAX machines will be available to receive transmissions 24 hours a day. In compliance with 1096 OG 30, the filing date accorded to each OFFICIAL fax transmission will be determined by the FAX machine's stamped date found on the last page of the transmission, unless that date is a Saturday, Sunday or Federal Holiday with the District of Columbia, in which case the OFFICIAL date of receipt will be the next business day.

Brenda Brumback
February 28, 2000

YVONNE EYLER, PH.D
PRIMARY EXAMINER